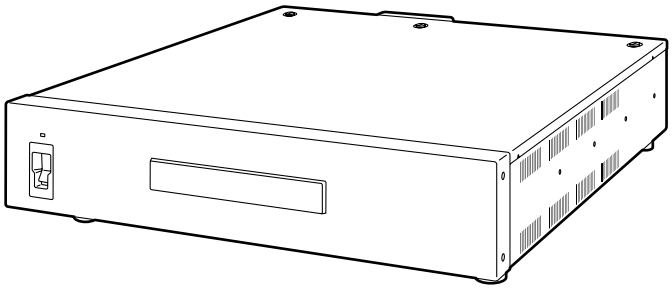
Panasonic

Operating Instructions

2K Processor

Model No. AJ-HDP2000P



Before operating this product, please read the instructions carefully and save this manual for future use.

F0707N0 -F D
Printed in Japan

ENGLISH
VQT1F04

Read this first!

■ **DO NOT REMOVE PANEL COVERS BY UNSCREWING THEM.**

To reduce the risk of electric shock, do not remove the covers. No user serviceable parts inside.
Refer servicing to qualified service personnel.

■ **THIS EQUIPMENT MUST BE GROUNDED**

To ensure safe operation, the three-pin plug must be inserted only into a standard three-pin power outlet which is effectively grounded through normal household wiring. Extension cords used with the equipment must have three cores and be correctly wired to provide connection to the ground. Wrongly wired extension cords are a major cause of fatalities.
The fact that the equipment operates satisfactorily does not imply that the power outlet is grounded or that the installation is completely safe.
For your safety, if you are in any doubt about the effective grounding of the power outlet, please consult a qualified electrician.

FCC Note:
This equipment has been tested and found to comply with the limits for a class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy, and if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Warning:
To assure continued FCC emission limit compliance, the user must use only shielded interface cables when connecting to external units. Also, any unauthorized changes or modifications to this equipment could void the user's authority to operate it.

WARNING:

- **TO REDUCE THE RISK OF FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS EQUIPMENT TO RAIN OR MOISTURE.**
- **TO REDUCE THE RISK OF FIRE OR SHOCK HAZARD, KEEP THIS EQUIPMENT AWAY FROM ALL LIQUIDS. USE AND STORE ONLY IN LOCATIONS WHICH ARE NOT EXPOSED TO THE RISK OF DRIPPING OR SPLASHING LIQUIDS, AND DO NOT PLACE ANY LIQUID CONTAINERS ON TOP OF THE EQUIPMENT.**

CAUTION:

TO REDUCE THE RISK OF FIRE OR SHOCK HAZARD AND ANNOYING INTERFERENCE, USE THE RECOMMENDED ACCESSORIES ONLY.

CAUTION:

TO REDUCE THE RISK OF FIRE OR SHOCK HAZARD, REFER CHANGES OF SWITCH SETTINGS INSIDE THE UNIT TO QUALIFIED SERVICE PERSONNEL.

CAUTION:

The mains plug of the power supply cord shall remain readily operable.
The AC receptacle (mains socket outlet) shall be installed near the equipment and shall be easily accessible. To completely disconnect this equipment from the AC mains, disconnect the mains plug from the AC receptacle.

CAUTION:

In order to maintain adequate ventilation, do not install or place this unit in a bookcase, built-in cabinet or any other confined space. To prevent risk of electric shock or fire hazard due to overheating, ensure that curtains and any other materials do not obstruct the ventilation.

CAUTION:

- **KEEP THE TEMPERATURE INSIDE THE RACK BETWEEN 41°F to 104°F (5°C to 40°C).**
- **BOLT THE RACK SECURELY TO THE FLOOR SO THAT IT WILL NOT TOPPLE OVER WHEN THE UNIT IS DRAWN OUT.**

indicates safety information.

Table of Contents

Read this first! 2

Operating Precautions 4

Overview/Features 5

1. Overviews 5
2. Features 5
   - 2.1. Compression 5
   - 2.2. VTRs Migration 5
   - 2.3. Dual-Link SDI & I/O 5
   - 2.4. Maximum Record Time 5
   - 2.5. Indicator Display 5
   - 2.6. Compact and Lightweight 5

Controls and their Functions 6

1. Front Panel 6
2. Connector Section (Rear) 7
3. I/Os 8
   - 3.1. VIDEO Input 8
   - 3.2. VIDEO Output 8
   - 3.3. AUDIO Input 9
   - 3.4. AUDIO Output 9
   - 3.5. TC (Time Code) Input 9
   - 3.6. TC (Time Code) Output 9
   - 3.7. META DATA Input 10
   - 3.8. META DATA Output 10
   - 3.9. Other I/Os (HD REF IN, VTR I/F) 10
   - 3.10. Service Only (15 Pin) 10

2K Processor & HD-D5 VTR System Connections 11

Connection with existing systems 12

Indicator Display (Front Panel LED) 13

Connection Check 14

Service Switch (Rear) 14

Power On 14

Restrictions 15

Rack Mounting 17

Specifications 18

Operating Precautions

■Power supply

Use an AC 120 V (U.S.A. and Canada) power supply.

- Be sure to take hold of the power plug when connecting and disconnecting the power cable.
- Do not run the power cable near a heating source.
- Do not place heavy objects on top of the power cable.
- Do not tamper with the power cable in any way.

■No insertion of foreign matters

Do not insert or drop metal or any foreign objects into the unit's openings (such as the fan vents).
Foreign objects inside the unit can cause a fire or short circuits. Contact the dealer for assistance.

■No disassembly

High voltage is supplied to some parts inside the unit, and touching these parts is not only dangerous but may cause a malfunction.
Leave all internal insections and adjustments to the dealer from whom you purchased the unit.

■DANGER: No operation if unit is malfunctioning

If smoke comes out or strange sounds or smells are detected from the unit, ask the dealer from whom you purchased the unit for repairs.

Overview/Features

1. Overviews

This new 2K Processor (AJ-HDP2000) for the HD-D5 VTRs (AJ-HD3700H[*1], AJ-HD3700A[*1], AJ-HD3700B[*2]) is designed for post-production and telecine systems, and this new technology provides a cost-effective and efficient method of recording, editing and archiving full-size 2K and 4:4:4 HDTV images on the film post-production standard D-5 mastering video tape recording system.
The 2K Processor allow professionals to record full 12-bit 4:4:4 "2K" 2048 × 1080 resolution film image data, or 12-bit 4:4:4 sampled 1920 × 1080 HD images onto Panasonic's AJ-HD3700H, AJ-HD3700A or AJ-HD3700B HD-D5 VTRs for editing, archiving, and distribution, a process that formerly was not easily achievable.

[*1] The software must be upgraded. For details, contact the dealer where you purchased the product.

[*2] The software for some VTRs must be upgraded. For details, contact the dealer where you purchased the product.

2. Features

2.1. Compression

The 2K Processor uses JPEG2000 compression, the similar compression scheme specified by the Digital Cinema Initiative (DCI) for cinema release, to convert film to digital data for subsequent processing in advanced DI environments while maintaining its resolution. The processor's advanced encoder ensures that images remain faithful throughout the recording process, and minimizes distortion and resolution degradation and offers optimized bit rate control and increased error tolerance for the reliable interchange required for editing.

2.2. VTRs Migration

The numerous Post facilities with capital investments in D-5 will be able to use their current AJ-HD3700 series, and the workflow that has worked so well for them with existing HD-D5 VTRs can be continued with a simple software upgrade for 2K and HD post-production.

2.3. Dual-Link SDI & I/O

For ease of monitoring and interfacing with more traditional high definition equipment, The 2K Processor has added a 4:4:4 to 4:2:2 conversion capability. The full audio capability of the D-5 format is maintained, including eight-channel 24-bit recordings, as well as the ability of the system to handle compression audio streams for multi-channel / second language applications. Audio I/O is by means of embedded HD-SDI or HD-D5 VTR's AES/EBU inputs, analog inputs. Interconnection from the processor to the HD-D5 VTR is by mapped compressed data over the HD-D5 VTR's existing HD-SDI input / outputs. The processor accepts dual link SMPTE 372M video / 2K inputs. Time Code in/out is embedded or HD-D5 VTR's XLR.

2.4. Maximum Record Time

Maximum recording time is 155 minutes, the same as the HD-D5 VTR's 24fps modes.

2.5. Indicator Display

Alarm indicator (RED):
When flashing, indicates that some errors have occurred.
When lit constantly, indicates a serious problem such as the fan has stopped or the rear service switch is ON.

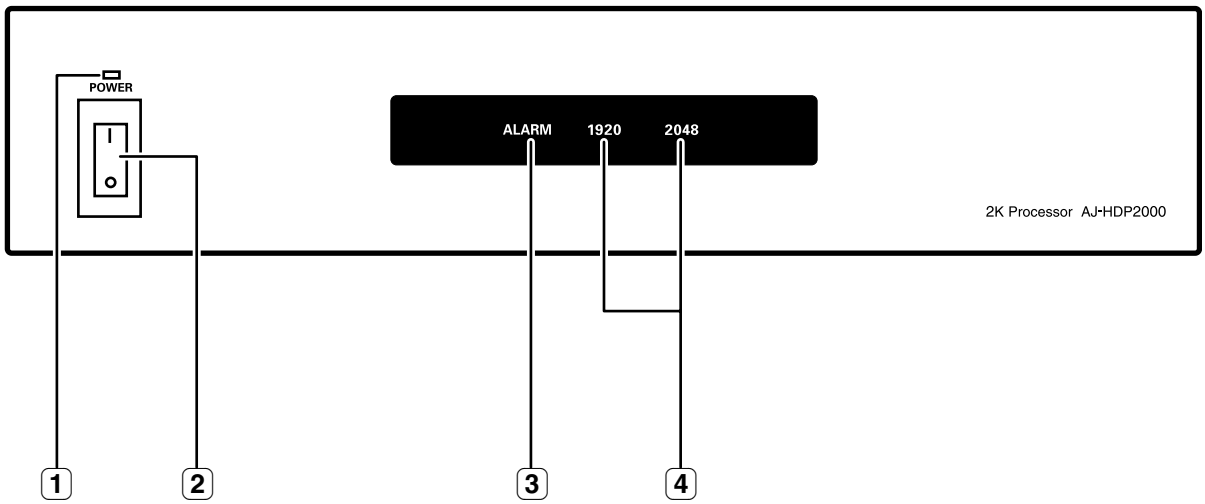
2048/1920 indicator (GREEN):
Indicates the Horizontal sample number of System settings.

2.6. Compact and Lightweight

With a height of 2U and weight of 7.5 kg (16.5 lb), this compact and lightweight unit can be transported easily.

Controls and their Functions

1. Front Panel



1 Power Lamp — This lights when the power is turned on.

2 Power Switch — When the ON side is pressed, the power is turned on; when the OFF side is pressed, the power is turned off.

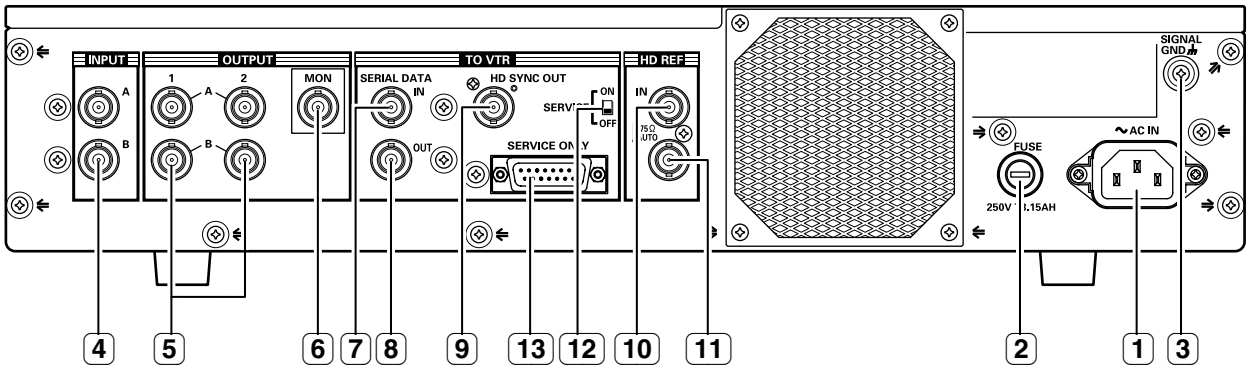
I : Press the " I " side of the power switch to turn the power on.

○: Press the " ○ " side of the power switch to turn the power off.

3 Alarm Lamp — This lights when a problem has occurred in the main unit, making it impossible to guarantee operation. (Refer to the messages on page 13.)

4 Horizontal Sample Display Lamp — This displays the H sample of the video signal that is system setting.

2. Connector Section (Rear)



1 **AC Input Socket**	Use the accessory power cord to connect the socket to the power outlet
2 **Fuse**	Power circuit fuse
3 **GND (ground) Terminal**	When connected with another unit, the unit must be ground here
4 **Dual-Link SDI Input**	For inputting the Dual-Link digital signals
5 **Dual-Link SDI Output 1, 2**	For outputting the Dual-Link or HD digital signals (4:4:4/4:2:2 switchable)
6 **HD-SDI Monitor Output**	For outputting the HD digital signals (4:2:2 samples)
7 **Serial Data input (HD-SDI)**	This is connected to the HD SDI OUT connector on the HD-D5 VTR for inputting for video/ audio/ tc output data from the HD-D5 VTR.
8 **Serial Data Output (HD-SDI)**	This is connected to the HD SDI IN connector on the HD-D5 VTR for outputting the video/ audio/ tc data.
9 **HD SYNC OUT**	This is connected to the REF IN HD connector on the HD-D5 VTR. The sync signal re-generated from the HD REF IN signal of the processor.
10 **HD REF IN**	For inputting the tri-level sync signals as reference signals
11 **HD Reference Through Output (Auto Terminated)**	This is through output of input reference signal
12 **Service Switch (only Use Service Maintenance)**	This slide switch is used only in service mode. Please Slide OFF for Normal Operation.
13 **SERVICE ONLY (RS-232C) <15pin> (only Use Service Maintenance)**	This connector is used only in service mode.

3. I/Os

3.1. VIDEO Input

Name	Video Input Signal	
INPUT A INPUT B	Dual Link SDI Input	BNC × 2, 75 Ω 1920 × 1080/23.98, 24PsF XYZ/RGB 4:4:4 SMPTE 372M/291M/292M/299M standard 2048 × 1080/23.98, 24PsF XYZ/RGB 4:4:4

- The following two VIDEO input signals are supported.
  1920 × 1080/23.98PsF, 24PsF XYZ/RGB 4:4:4 12 bits
  2048 × 1080/23.98PsF, 24PsF XYZ/RGB 4:4:4 12 bits
- The color space signal format is selected from the following two types in FRONT MENU of the HD-D5 VTR. SYSTEM settings for the RGB and XYZ color spaces
  RGB: Mode for recording and playback RGB color space
  XYZ: Mode for recording and playback XYZ color space

3.2. VIDEO Output

Name	Video Output Signal	
OUTPUT 1A OUTPUT 1B OUTPUT 2A OUTPUT 2B	Dual Link SDI Output	BNC × 2 × 2, 75 Ω 1920 × 1080/23.98, 24PsF XYZ/RGB 4:4:4 SMPTE 372M/291M/292M/299M standard 2048 × 1080/23.98, 24PsF XYZ/RGB 4:4:4 1920 × 1080/23.98, 24PsF YPbPr 4:2:2 SMPTE 291M/292M/299M standard
OUTPUT MON	Single HD SDI Monitor Output	BNC × 1, 75 Ω (Super ON/OFF) 1920 × 1080/23.98, 24PsF YPbPr 4:2:2 SMPTE 292M standard (Video Signal only w/o ANC data)

- There are three types of VIDEO output signals, and output signals are set in SYSTEM FORMAT in FRONT MENU of the HD-D5 VTR.
  1920 × 1080/23.98PsF, 24PsF XYZ/RGB 4:4:4 12/10 bits
  2048 × 1080/23.98PsF, 24PsF XYZ/RGB 4:4:4 12/10 bits
  1920 × 1080/23.98PsF, 24PsF YPbPr 4:2:2 10 bits
- The main output is available in 4:2:2 format × 4 lines.
- Both main output and monitor output have the Dynamic Rounding function when 10-bit output is selected.
- The VANC/HANC data, such as Audio/TC/Meta/Payload information, is not embedded on the OUTPUT MON (Monitor) output.
- In OUTPUT MON (Monitor) and when the 4:2:2 format is selected for the main system, an H CROP function for 1920 samples is available in 2048 samples. However, the Squeeze and Letter Box functions are not available. The following three kinds of modes are available as fixed Crop modes.
  CTR Crop: Both sides are equally cropped so that the number of samples is 1920.
  L Crop: The left side is cropped so that the number of samples is 1920.
  R Crop: The right side is cropped so that the number of samples is 1920.

- OUTPUT MON (Monitor) has a function to turn on/off superimposition in SUPER.

3.3. AUDIO Input

Audio Input Signal	
Dual Link SDI Input (Embedded Audio)	BNC × 2, 75 Ω SMPTE 299M standard

- For AUDIO input, an SDI Embedded Audio function is available with the 2K processor, and AES/EBU Digital Audio, Analog Audio, and CUE Audio inputs are available from the HD-D5 VTR in a manner similar to the single operation of the HD-D5 VTR.
- The AUDIO input signal is selected in FRONT MENU of the main unit in a manner similar to the single operation of the HD-D5 VTR.
- SDI Embedded Audio input signals are available only for Ach of Dual Link SDI signals.

3.4. AUDIO Output

Audio Output Signal	
Dual Link SDI Output (Embedded Audio)	BNC × 2 × 2, 75 Ω SMPTE 299M standard

- For AUDIO output, an SDI Embedded Audio function is available with the 2K processor, and AES/EBU Digital Audio, Analog Audio, and CUE Audio outputs are available from the HD-D5 VTR in a manner similar to the single operation of the HD-D5 VTR.
- The AUDIO output signal is selected in FRONT MENU of the HD-D5 VTR in a manner similar to the single operation of the HD-D5 VTR.
- SDI Embedded Audio output signals are available only on Ach of Dual Link SDI signals.
- SDI Embedded Audio signals are not available on OUTPUT MON (Monitor).

3.5. TC (Time Code) Input

TC Input Signal	
Dual Link SDI Input (Embedded LTC/VITC)	BNC × 2, 75 Ω SMPTE 291M standard

- For TC input, an SDI Embedded HANC TC function is available with the 2K processor, and the LINEAR TC input is available from the HD-D5 VTR in a manner similar to the single operation of the HD-D5 VTR.
- For SDI Embedded HANC TC input signals, only Ach of Dual Link SDI signals is supported.
- LTC or VITC can be selected as a SDI Embedded HANC TC input signal.
- The TC input signal is selected in FRONT MENU of the HD-D5 VTR in a manner similar to the single operation of the HD-D5 VTR.

3.6. TC (Time Code) Output

TC Output Signal	
Dual Link SDI Output (Embedded LTC/VITC)	BNC × 2 × 2, 75 Ω SMPTE 291M standard

- For the TC output, an SDI Embedded HANC TC function is available with the 2K processor, and the LINEAR TC output is available from the HD-D5 VTR in a manner similar to the single operation of the HD-D5 VTR.
- SDI Embedded HANC TC output signals are available only on Ach of Dual Link SDI signals.
- SDI Embedded HANC TC signals are not available on the OUTPUT MON (Monitor).

3.7. META DATA Input

- For META DATA input, an SDI Embedded VANC function is available with the 2K processor, only Y signals in Ach of Dual Link SDI signals are supported.
- META DATA can record up to 2,880 words per segmented frame.
  The capacity of 2,880 words is the upper limit even when data exceeds the capacity (the same as single operation of the HD-D5 VTR in the specifications).

3.8. META DATA Output

- For META DATA output, an SDI Embedded VANC function is available with the 2K processor, and META DATA signals are embedded only on Y signals in Ach of Dual Link SDI signals.
- META DATA output is embedded up to 2,880 words per segment frame on Y signals, where data is entered from the head (the same as single operation of the HD-D5 VTR in specification).
- META DATA signals are not embedded on the OUTPUT MON (Monitor).

3.9. Other I/Os (HD REF IN, VTR I/F)

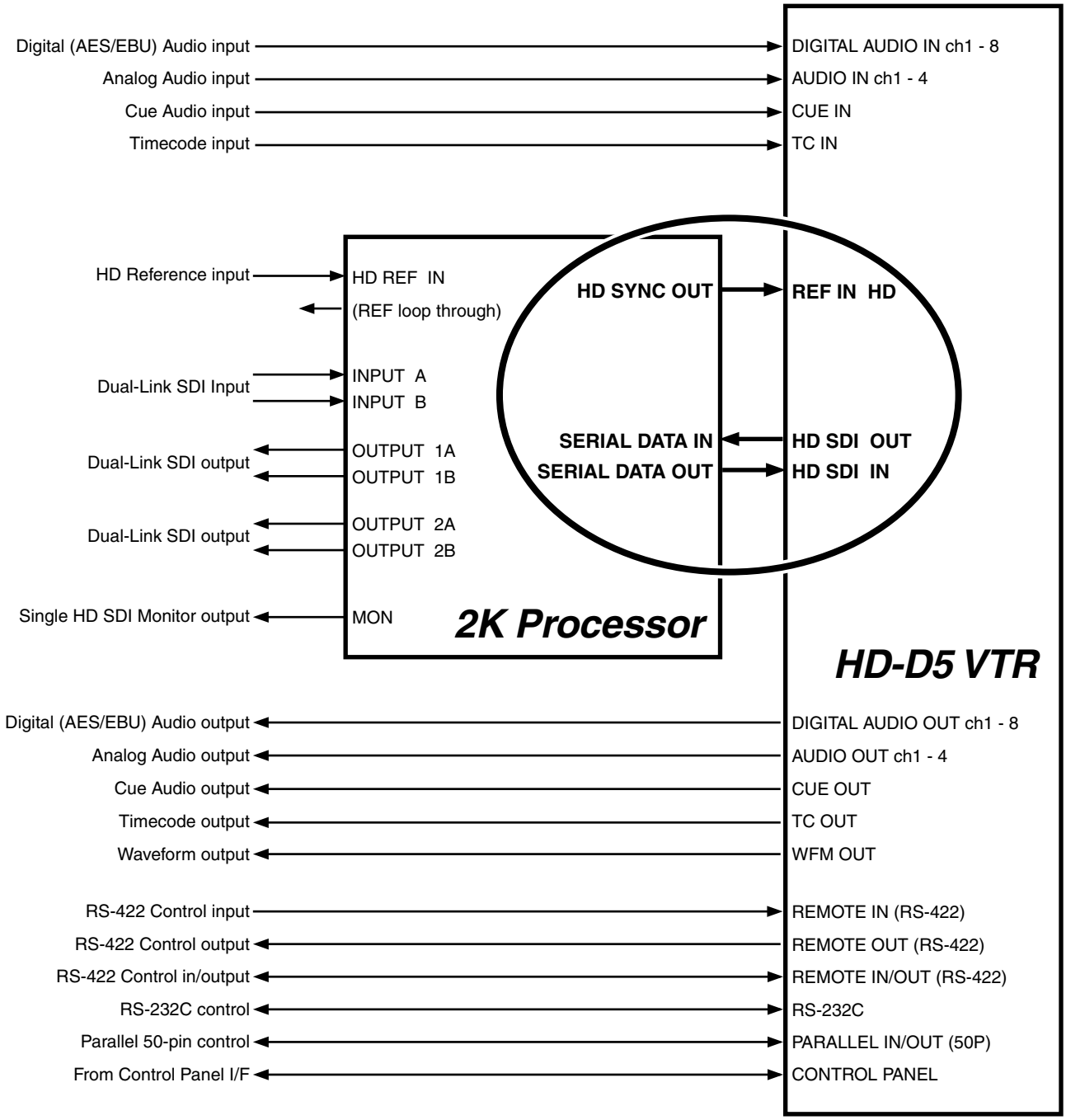
Terminal name	Other Input and Output	
HD REF IN	HD Reference Input	BNC × 2 (loop-through × 1), 75 Ω automatic termination HD (1920 × 1080/23.98, 24PsF) tri-level sync
HD SYNC OUT	HD SYNC Output	BNC × 1, 75 Ω HD (1920 × 1080/23.98, 24PsF) tri-level sync Advanced Reference signal for the HD-D5 VTR
SERIAL DATA OUT	VTR HD_SDI Output	BNC × 1, 75 Ω 1920 × 1080/23.98, 24PsF SMPTE 292M compliance
SERIAL DATA IN	VTR HD_SDI Input	BNC × 1, 75 Ω 1920 × 1080/23.98, 24PsF SMPTE 292M compliance

- The reference input of the HD REF IN is only accepted tri-level signals of HD (1920 × 1080/23.98, 24PsF). Loop-through output is available.
- Be sure to connect the HD SYNC OUT to the HD REF IN of the HD-D5 VTR to supply the tri-level signals of HD (1920 × 1080/23.98, 24PsF) from 2K Processor.
- Be sure to connect the SERIAL DATA OUT to the HD SDI IN of the HD-D5 VTR.
- Be sure to connect the SERIAL DATA IN to one of the HD SDI OUT1, OUT2 or OUT3 of the HD-D5 VTR.

3.10.Service Only (15 Pin)

Not applicable.

2K Processor & HD-D5 VTR System Connections

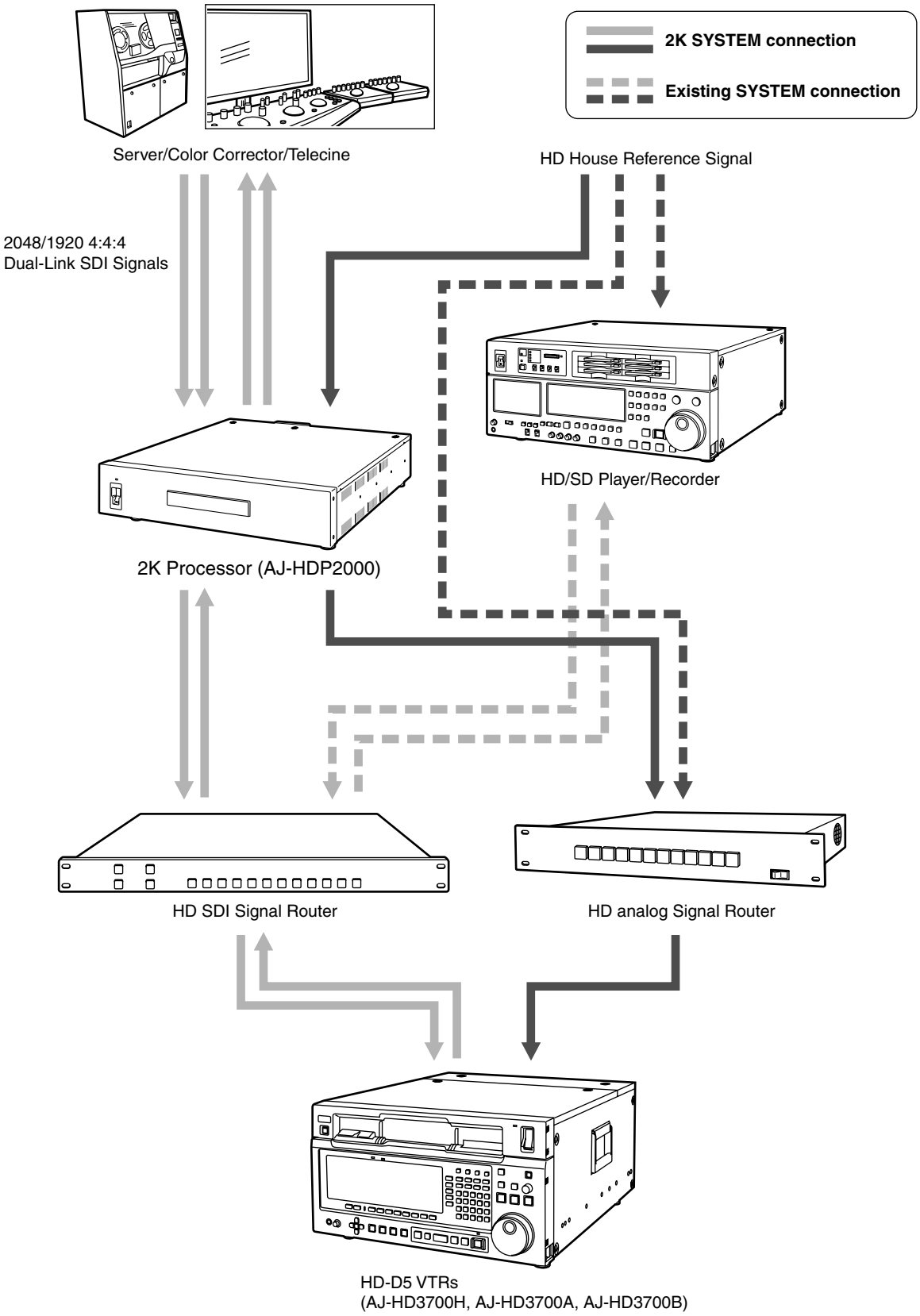


Note: Be Sure to Connect Three I/Os for 2K Processor Systems as below

2K Processor		AJ-HD3700B/A/H
HD SYNC OUT	⟺	**REF IN HD**
SERIAL DATA IN	⟺	**HD SDI OUT**
SERIAL DATA OUT	⟺	**HD SDI IN**

Connection with existing systems

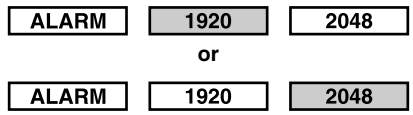
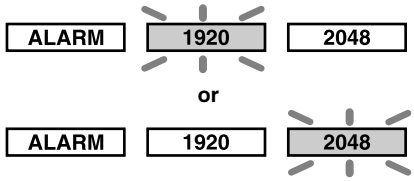
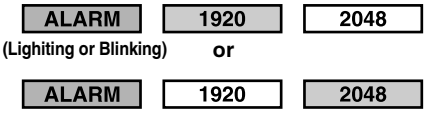
This is an example where the connections for the existing system and the 2K system are switched within the router.



To switch to the 2K system mode, select “2048 (PsF)” or “1920 (PsF)” in F3 (VIDEO) in SYSTEM SET UP menu on the HD-D5 VTR.
For details, refer to pages 9 and 10 of the “Operating Instructions Supplement” for the AJ-HD3700H, AJ-HD3700A, and AJ-HD3700B.

Indicator Display (Front Panel LED)

The operating state of this unit can be checked on the three LEDs (Alarm Lamp, Horizontal Sample Display Lamps) on the front panel: Lighting or Blinking.

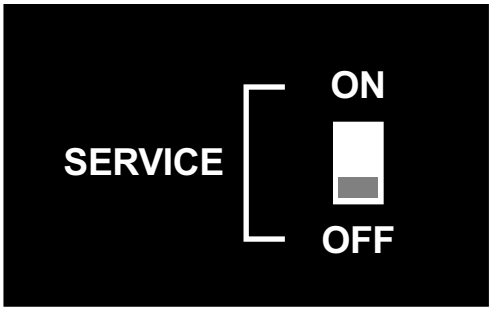
Display	Description
	Normal operating state (Lighting: When there is no warning or when the warnings are masked from MENU)
	Format error (In the following cases, 1920 LED or 2048 LED blinks normally or rapidly.) **<Warnings indicated by rapid blinking>** **RECORDED FORMAT UNMATCH (NO J2K TAPE):** TAPE is not 2K processor recording format. **<Warnings indicated by normal blinking>** **RECORDED FORMAT UNMATCH:** There is a mismatch between SYSTEM FORMAT of the unit selected in settings and FORMAT of TAPE. (2048/1920, XYZ/RGB) **UNMATCH H SAMPLE BETWEEN INPUT SIGNAL AND SYSTEM:** There is a mismatch in H SAMPLE between the SYSTEM set value and the input signal.
	Other errors (ALARM Lighting or Blinking: In the case of a warning corresponding to an alarm indication) **<Warning corresponding to lighting alarm>** **2K FAN STOP:** The fan of the 2K processor stops. **2K NO REMOTE:** The service switch on the back of the 2K processor is not in the OFF position. **<Warnings corresponding to blinking alarm>** **CRC ERROR IN SERIAL DATA INPUT FROM HDD5:** A CRC error occurs in SERIAL DATA (HD SDI) signals from the HD-D5 VTR main unit to the 2K processor. **OUT OF RANGE OF SYSTEM PHASE BETWEEN REF AND INPUT:** There is a large phase difference between the input signal and REF IN. **INPUT SIGNAL UNMATCH SYSTEM FREQUENCY:** There is a mismatch in frame frequency between the SYSTEM set value and the input signal. **SUBSTANDARD TIMING DIFFERENCE IN DUAL LINK 2K INPUT:** The timing-phase difference of Dual-Link IN A/Bch is big. **CRC ERROR IN DUAL LINK CHA 2K INPUT:** A CRC error occurs in signals on Dual-Link IN Ach. **CRC ERROR IN DUAL LINK CHB 2K INPUT:** A CRC error occurs in signals on Dual-Link IN Bch. **NO EXTERNAL HD_REFERENCE:** HD REF IN on the HD-D5 VTR is not connected. (Although this is the existing warning for the HD-D5 VTR, the ALARM LED of the 2K Processor also blinks.)

Connection Check

After the regular system is connected, it is possible to check which devices are connected to each other by executing CONNECTION CHECK in the Front Panel MENU of the HD-D5 VTR when you own more than one unit of the 2K Processor and HD-D5 VTR.

All three LEDs of “ALARM”, “2048” and “1920” repeatedly blink during the operation described on the left. (For the regular system connection)

Service Switch (Rear)



<Note>
Service Switch (only Use Service Maintenance)
This slide switch is only for service mode.
Please make sure slide OFF for Normal Operation.

Power On

For the power supply to each unit, construct 2K SYSTEM and then turn on the power to the 2K Processor, before turning on the power to the HD-D5 VTR.

Restrictions

Reference vs. Input Signal Phase

The 2K processor does not have input buffer memory; therefore, be sure to lock and match the phase between the reference signal and input signals. If the signal phases are not locked and matched, the phase of signals, output signals might be corrupted.

System vs. Input Signal Frequency

The 2K processor does not have input buffer memory; therefore, be sure to match the frequencies between the system settings and input signals. If the frequencies are not matched, output signals might be corrupted.

4:2:2 (Y Pb Pr) Output

The 2K Processor has no built-in gamma conversion. Therefore, in the output of 4:2:2 (YPbPr color space), only conversion from RGB (gamma = 2.2) produces the correct hue. The hue varies in other cases.

Video Output in SEARCH and FF/REW

Video output in SEARCH and FF/REW is with low-resolution images, with low image quality.

SYSTEM setting for RGB and XYZ color spaces

The input of color space signals that differ from those in SYSTEM results in incorrect color space output. Playback of recording color space signals on tapes that differ from those in SYSTEM results in incorrect color space output.

SYSTEM settings for 2048 and 1920 horizontal samples

Recording and playback depend on the SYSTEM settings.

- Recording is based on the number of horizontal samples in SYSTEM settings and Tape ID, even when different input signals from those in SYSTEM are supplied.
- Playback is based on the number of horizontal samples in SYSTEM settings, even when tape with a different number of horizontal samples from those in SYSTEM is played back.

In the above case, FRONT LED (2048/1920) blinks according to SYSTEM settings.
In addition, when a format other than that supporting the 2K processor is played back, it blinks rapidly according to the SYSTEM settings.

Example 1:
Input of 2048 signals with 1920 selected in SYSTEM settings:

On each side, 64 samples are cropped to record as 1920 samples. (Tape ID = 1920)

Example 2:
Input of 1920 signals with 2048 selected in SYSTEM settings:

Black signals of 64 samples are added to each side to record as 2048 samples. (Tape ID = 2048)

Example 3:
Playback of recording tape for 2048 with 1920 selected in SYSTEM settings:

On each side, 64 samples are cropped for playback as 1920 samples.

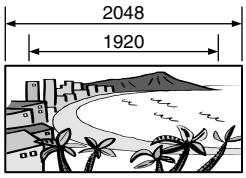
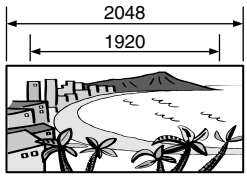
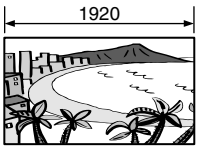
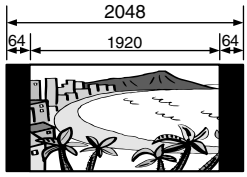
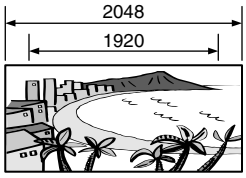
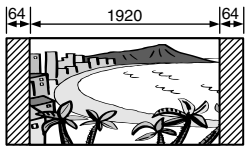
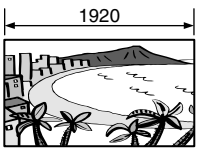
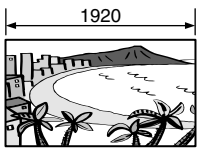
Example 4:
Playback of recording tape for 1920 with 2048 selected in SYSTEM settings:

Black signals of 64 samples are added to each side for playback as 2048 samples.
In 4:2:2 output, it appears as normal HD signals with normal output due to the Side Crop function.

Example 5:
Playback of recording tape in the format of 1080/23PsF 4:2:2 with 1920 selected in SYSTEM settings:

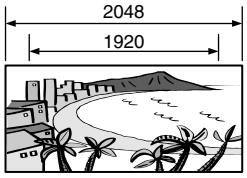
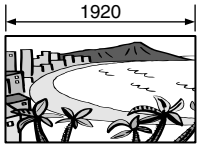
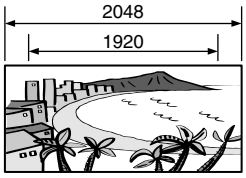
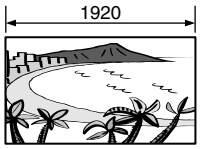
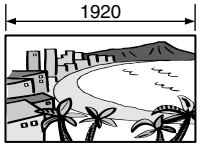
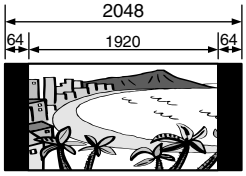
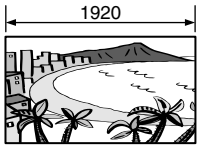
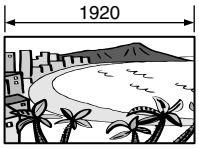
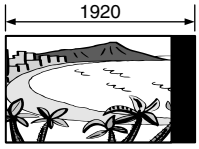
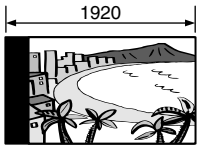
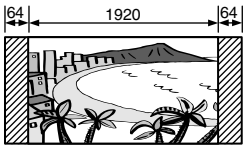
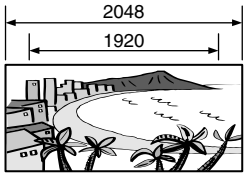
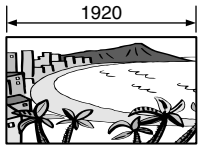
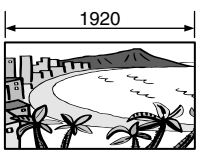
FRONT LED “1920” blinks rapidly. The output signals are the freeze frame of the last image.

Differences in the actual image conditions due to differences in the number of H Samples between SYSTEM settings and input signals (According to the SYSTEM settings)

SYSTEM settings (MENU selection)	Input signals	Recorded images
2048	**2048** 	
	1920 	
1920	**2048** 	
	1920 	

Restrictions (Continued)

Differences in the actual image conditions due to differences in the number of H Samples between SYSTEM settings and Tape playback (Tape recording ID) (According to the SYSTEM settings)

SYSTEM settings (MENU selection)	TAPE playback signals	H CROP (MENU selection)	SAMPLING = 4:4:4 output images	SAMPLING = 4:2:2 output images
2048	**2048**	**CTR CROP**		
		L CROP		
		R CROP		
	1920	**CTR CROP**		
		**L CROP**		
		R CROP		
1920	**2048**			
				
	1920			
				

Internal signal source (INT-SG)

- There are four internal signal sources: CB1, CB2, BLACK, and WHITE. (10-bit precision)
- XYZ and RGB color spaces are expressed differently, resulting in a difference in the internal signal format.

<In SYSTEM Color Space = RGB>

CB1: 100% Color Bar
CB2: 75% Color Bar

<In SYSTEM Color Space = XYZ>

CB1: Color Bar Signal Pattern 1
CB2: Color Bar Signal Pattern 2

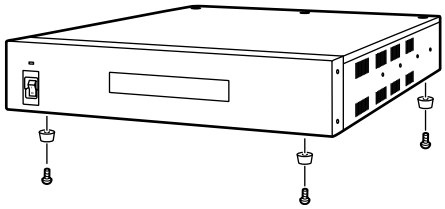
INPUT CHECK Function

Pressing the INPUT CHECK button changes the TC display in the monitor output SUPER and the TCG display in the front panel to the internal TCG.
The INPUT CHECK function on the HD-D5 VTR Front Panel is disabled.

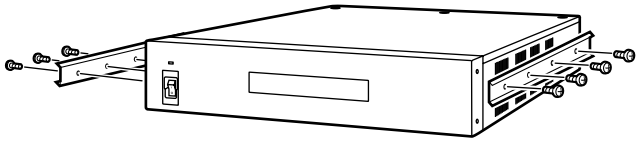
Rack Mounting

The unit can be installed in a 19-inch standard rack using the rack-mount adaptors supplied with the unit.
We recommend using the slide rails and brackets specified below for the installation.
CC3001-99-0191 slide rails and B-308 brackets are made by CHASSIS TRAK.
For further details, consult your dealer.

1 Remove the four feet from the unit's bottom panel.
- Take care to avoid exposing the unit to vibration or impact.



2 Mount the slide rail inner members onto the unit.

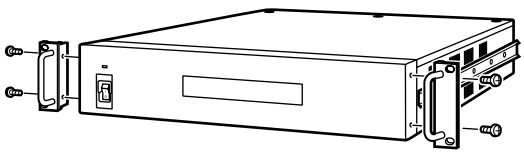


- The length of the mounting screws is limited.
  Use the screws (M4×10) provided with the slide rails.
  If one or more mounting screws are lost or misplaced, use screws less than 10 mm long.
- Be sure to fully tighten the inner members in the four places on the left and right.

3 Attach the outer members of the slide rails and the brackets to the rack.

◆Note
Check that the height is the same on the left and the right.

4 Attach the rack-mount adaptors supplied with the unit to the unit.



- Use the screws provided with the rack-mount adaptors as the mounting screws.
- Be sure to fully tighten the rack-mount adaptors in the two places on the left and the right sides.

5 Remove the stoppers of the inner members, and install the unit in the rack.
After installation, check that the unit moves smoothly.

- Keep the temperature in the rack between 5°C (41°F) and 40°C (104°F)
- Use the rack-mount angular brackets supplied with the unit.

Specifications

[GENERAL]

Power supply:	AC 120 V, 50/ 60 Hz
Rated Current:	0.6 A

indicates safety information.

Operating Temperature:
5°C to 40°C (41°F to 104°F)
Operating Humidity:
10% to 80% (no condensation)
Weight:
Approx. 7.5 kg (16.5 lb)
Dimensions (W × H × D):
(not including supporting feet, jacks, connectors and fan.)
424 mm × 87 mm × 470 mm (2U size)
(16-3/4 inches × 3-7/16 inches × 18-1/2 inches)
Recording Video Signal:
2048 × 1080/23.98p, 24p XYZ/RGB 4:4:4
1920 × 1080/23.98p, 24p XYZ/RGB 4:4:4
Video Recording Format:
HD-D5 JPEG2000
Audio Recording Format:
48 kHz/24 bits, 8CH
Recording Media:
HD-D5 Tape
Recording/Playback Time:
AJ-D5C124LP Approx. 155 min.
Digital Slow:
-1 to +1 times normal speed
Search Speed:
Max. 50 ×
Edit Frame Accuracy:
±0 Frame

[VIDEO]

Sampling Frequency:
74.176 MHz/74.25 MHz
Quantizing:
XYZ/RGB 4:4:4, 12 bits
Video Compression Format:
JPEG2000 (ISO/IEC15444)
Error Correction:
Reed-Solomon product code
Video Bit Rate:
Max. 188 Mbps

■Video Input Signal

Dual Link SDI Input:
BNC × 2, 75 Ω
1920 × 1080/23.98PsF, 24PsF 4:4:4
SMPTE 372M/291M/292M/299M standard
2048 × 1080/23.98PsF, 24PsF 4:4:4

■Video Output Signal

Dual Link SDI Output:
(Single HD SDI Output in case of 4:2:2)
BNC × 2 × 2, 75 Ω
1920 × 1080/23.98PsF, 24PsF 4:4:4
SMPTE 372M/291M/292M/299M standard
2048 × 1080/23.98PsF, 24PsF 4:4:4
1920 × 1080/23.98PsF, 24PsF YPbPr 4:2:2
SMPTE 291M/292M/299M standard
Single HD SDI Monitor output:
BNC × 1, 75 Ω (SUPER ON/OFF)
1920 × 1080/23.98PsF, 24PsF YPbPr 4:2:2
SMPTE 292M standard
(Video Signal only w/o ANC data)

[Audio]

Sampling Frequency:
48 kHz (sync video)
Quantizing:
24 bits

■Audio Input Signal

Dual Link SDI Input: (Embedded Audio)
BNC × 2, 75 Ω (LinkA only) 8CH
SMPTE 299M standard

■Audio Output Signal

Dual Link SDI Output: (Embedded Audio)
BNC × 2 × 2, 75 Ω (LinkA only) 8CH
SMPTE 299M standard

[TC]

■TC Input Signal

Dual Link SDI Input: (Embedded LTC/VITC)

BNC × 2, 75 Ω (LinkA only)

SMPTE 291M standard

■TC Output Signal

Dual Link SDI Output: (Embedded LTC/VITC)

BNC × 2 × 2, 75 Ω (LinkA only)

SMPTE 291M standard

[Other Input and Output]

HD Reference Input:

BNC × 2 (loop-through ×1),
75 Ω automatic termination

HD(1920 × 1080/23.98PsF, 24PsF) tri-level sync

HD SYNC Output:

BNC × 1, 75 Ω

HD(1920 × 1080/23.98PsF, 24PsF) tri-level sync,
Advanced Reference signal for HD-D5 VTRs

Serial Data Output (VTR HD SDI):

BNC × 1, 75 Ω

1920 × 1080/23.98PsF, 24PsF

SMPTE 292M compliance

Serial Data Input (VTR HD SDI):

BNC × 1, 75 Ω

1920 × 1080/23.98PsF, 24PsF

SMPTE 292M compliance

[Accessories (supplied)]

Power cord (1)

Rack-mount adaptor (2)

Weight and dimensions shown are approximate.
Specifications are subject to change without notice.

Panasonic®

Panasonic Broadcast & Television Systems Company
Unit Company of Panasonic Corporation of North America

Executive Office:
One Panasonic Way 4E-7, Secaucus, NJ 07094 (201) 348-7000

EASTERN ZONE:
One Panasonic Way 4E-7, Secaucus, NJ 07094 (201) 348-7196
Southeast Region: (201) 348-7162

WESTERN ZONE:
3330 Cahuenga Blvd W., Los Angeles, CA 90068 (323) 436-3500

Government Marketing Department:
One Panasonic Way 2E-10, Secaucus, NJ 07094 (201) 348-7587

Broadcast PARTS INFORMATION & ORDERING:
9:00 a.m. – 5:00 p.m. (EST) (800) 334-4881/24 Hr. Fax (800) 334-4880
Emergency after hour parts orders (800) 334-4881

TECHNICAL SUPPORT:
Emergency 24 Hour Service (800) 222-0741

Panasonic Canada Inc.
5770 Ambler Drive, Mississauga, Ontario L4W 2T3 (905) 624-5010

Panasonic de Mexico S.A. de C.V.
Av angel Urraza Num. 1209 Col. de Valle 03100 Mexico, D.F. (52) 1 951 2127

Panasonic Puerto Rico Inc.
San Gabriel Industrial Park, 65th Infantry Ave., Km. 9.5, Carolina, Puerto Rico 00630 (787) 750-4300

© 2007 Matsushita Electric Industrial Co., Ltd. All Rights Reserved.

P